Montana Department of Transportation
Research Programs
November 2008

Experimental Project Annual Report

EVALUATION OF HIGH DENSITY POLYETHYLENE PIPE (HDPE) CULVERT IN A MAINLINE APPLICATION

Project Name:	Angela North & South
Project Number:	STPP 18-1(9)18
FHWA Project Number:	MT 00-09
Project Location:	Highway 59 (P-18); C000018, Rosebud County, Glendive District – RP 23.5-24
Description:	Experimental trial using High Density Polyethylene Pipe (HDPE) culverts in a mainline application
Date of Installation:	August 2007
Report Period:	Spring/Fall 2008
Principal Investigator:	Craig Abernathy Experimental Program Manager

Objective

The objectives of the annual report are to document the performance of the experimental feature since construction. To visually document the condition of the HDPE pipe culvert and to assess any change in interior pipe diameter (deflection), joint integrity, buckling, or other physical attributes.

Experimental Design

Three sizes of diameter pipe were installed in this project; 750mm (approximately 30"), 900mm (approximately 36") and 1200mm (approximately 48") respectively. The product chosen is the Advanced Drainage System (ADS) N-12WT IB corrugated watertight, and soil-tight smooth interior polyethylene pipe.

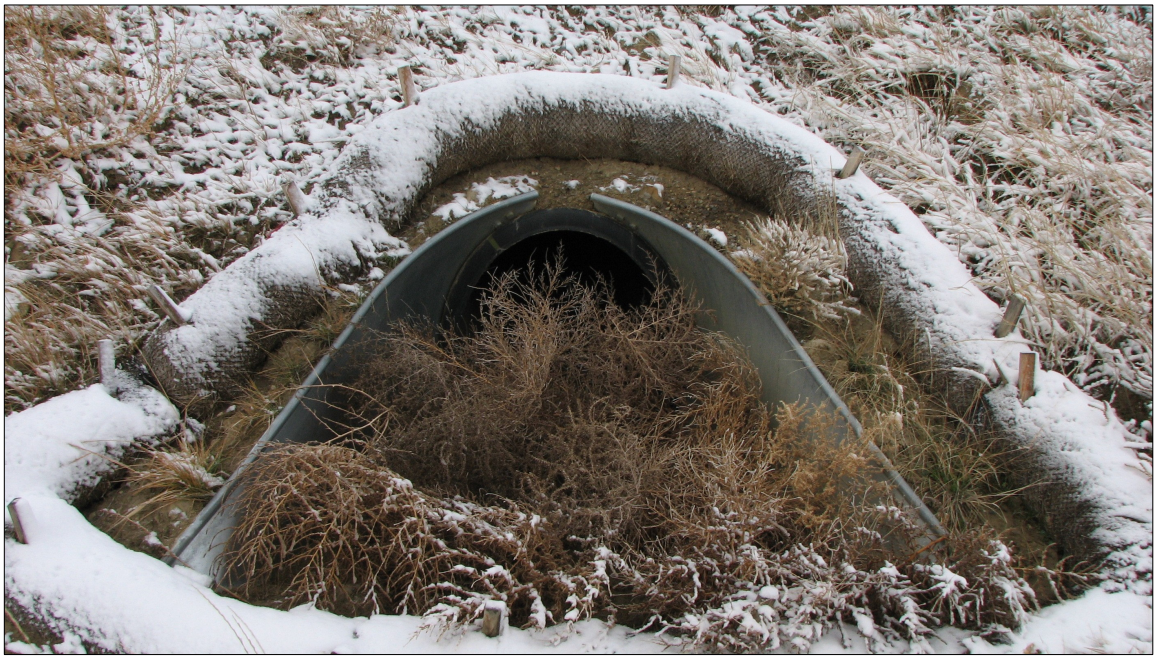
Observation

Installation of the HDPE pipes was completed in the summer of 2007. Research was present to document the installation as a baseline for performance. To date all sections are performing well based on visual observations. The site visits were conducted in April and November. No changes in pipe condition were noted from the spring to fall inspections as compared to initial construction. All flared-end terminals (FETS) were tight with proper placement, no additional internal deflection (specifically the1200mm HDPE) was observed since construction.

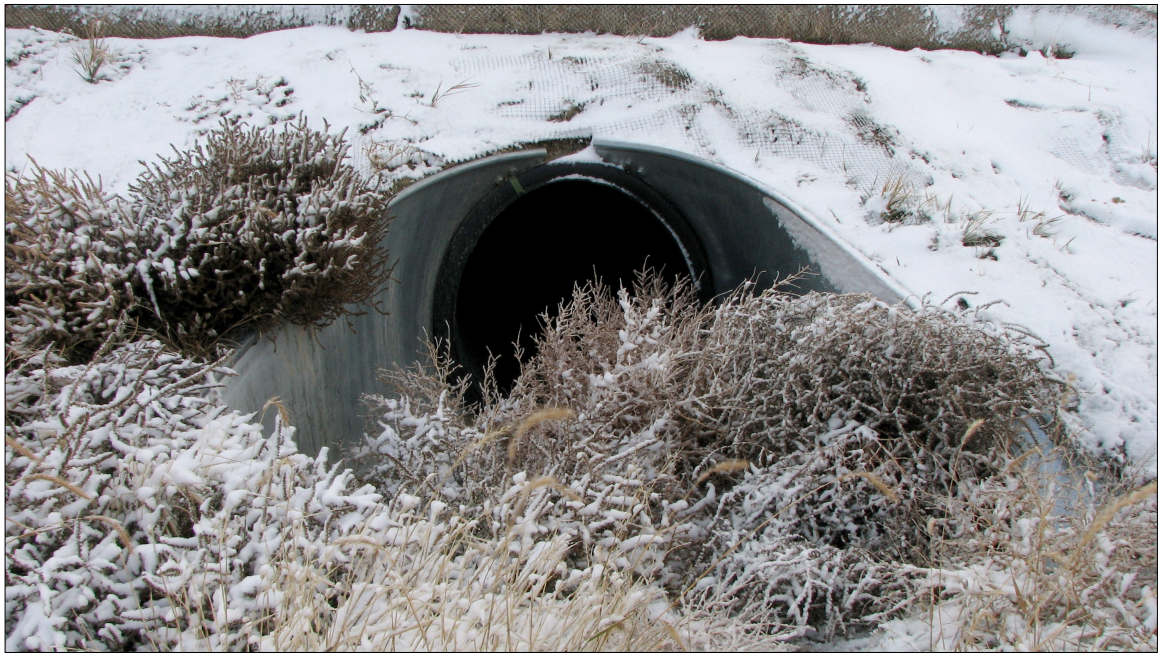
During construction it was noted that the completed HDPE installations had a slight oval shape viewed internally. Measurements taken at random spots within the interior of the 1200mm pipe showed that, on average, the horizontal walls of the pipes had deflected inwardly up to 13mm (.5") to 38mm (1.5") with the vertical (top to bottom) deflection ranging from 13mm (.5") to 19mm (.75"). Measurements taken during the 2007 installation and compared at the same locations within the 1200mm HDPE at the 2008 spring/fall inspections revealed no change in the deflection. Currently it is assumed this initial structural deflection was caused by the compaction process during installation.

The following are images taken during the November 2008 inspection:

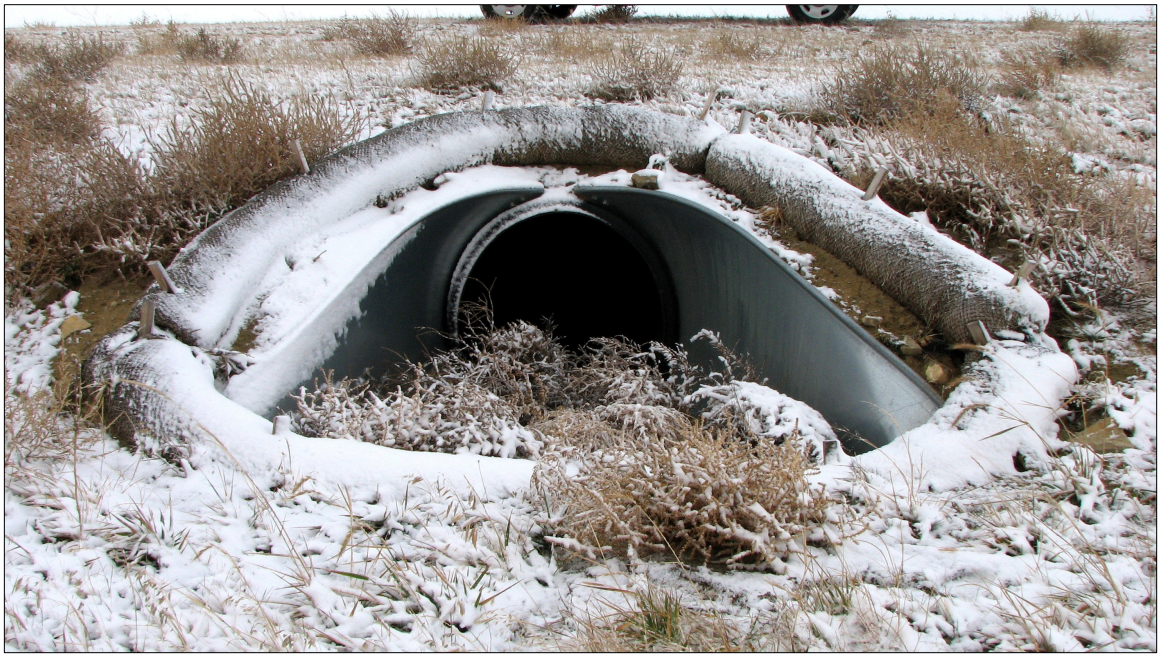
750mm (30") Inlet



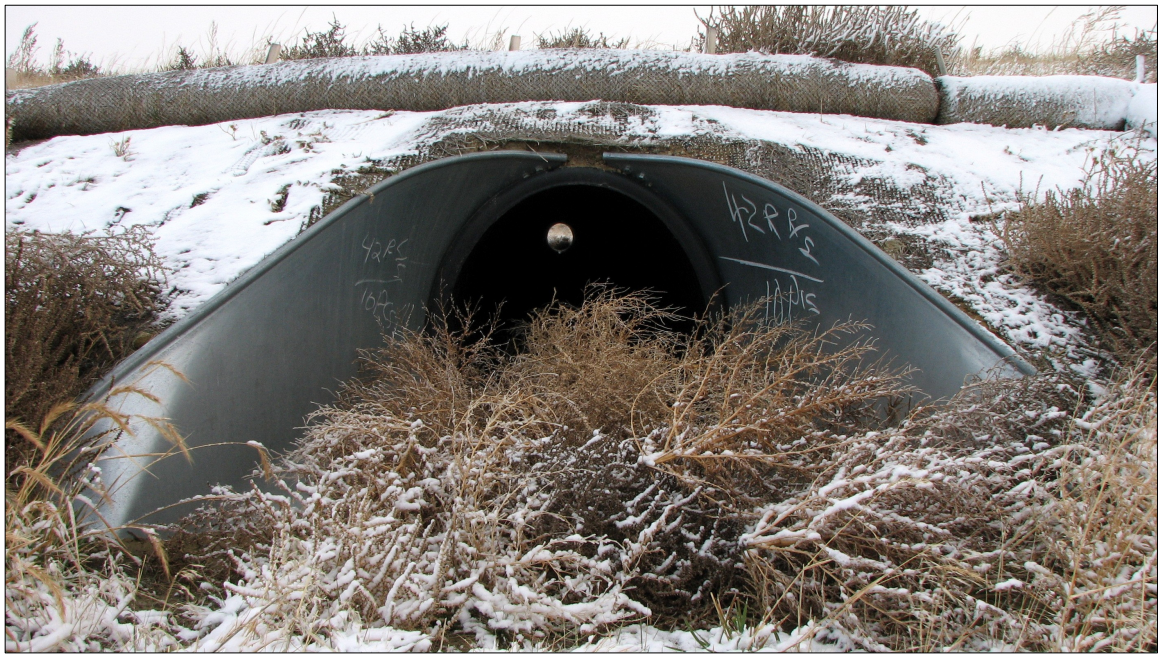
750mm (30") Outlet



900mm (36") Inlet



900mm (36") Outlet



1200mm (48") Inlet

1200mm (48") Outlet

This report and other information regarding this project may be found at:
http://www.mdt.mt.gov/research/projects/angela.shtml